# DRAFT

# ENVIRONMENTAL ASSESSMENT

# ESTRELLA FREEWAY, SR 303L
# Happy Valley Road to 43rd Avenue

**ADOT PROJECT NO. S 303-A-200**
**TRACS NO. 303L MA 003 H5946 01L**

**Prepared by**

**ARIZONA DEPARTMENT OF TRANSPORTATION**

**August 2006**

**ARIZONA DEPARTMENT OF TRANSPORTATION**
**INTERMODAL TRANSPORTATION DIVISION**
**ENVIRONMENTAL PLANNING GROUP**
**205 South 17th Avenue**
**Phoenix, Arizona 85007**

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**for**

## ESTRELLA FREEWAY, SR 303L
## Happy Valley Road to 43rd Avenue
**(Segments 1, 2, and 4)**

**Project No. S 303-A-200**
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**August 2006**

Approved by: Thor Anderson Date: 8-14-06
Thor Anderson, Manager
Environmental Planning Group
Arizona Department of Transportation

This Draft Environmental Assessment has been prepared in accordance with the provisions and requirements of Title 23, Code of Federal Regulations, Part 771, relating to the implementation of the National Environmental Policy Act of 1969 (42 U.S. Code 4332 (2)(c)).

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| | |
|---|---|
| $\mu g/m^3$ | micrograms per cubic meter |
| °F | degrees Fahrenheit |
| | |
| ADEQ | Arizona Department of Environmental Quality |
| ADOT | Arizona Department of Transportation |
| AGFD | Arizona Game and Fish Department |
| ANPL | Arizona Native Plant Law |
| APS | Arizona Public Service Company |
| ASLD | Arizona State Land Department |
| AZPDES | Arizona Pollution Discharge Elimination System |
| | |
| BLM | Bureau of Land Management |
| BOR | Bureau of Reclamation |
| | |
| CAP | Central Arizona Project |
| CAWCD | Central Arizona Water Conservation District |
| CBC | concrete box culvert |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| Corps | U.S. Army Corps of Engineers |
| | |
| dB | decibels |
| dBA | A-weighted decibels |
| DCR | Design Concept Report |
| DEA | Draft Environmental Assessment |
| | |
| EA | Environmental Assessment |
| EDR | Environmental Data Resources, Inc. |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| | |
| FEMA | Federal Emergency Management Agency |
| FHWA | Federal Highway Administration |
| FIRM | Flood Insurance Rate Map |
| | |
| HOV | high-occupancy vehicle |
| Hz | hertz |
| | |
| I-10 | Interstate 10 |
| I-17 | Interstate 17 |
| | |
| kV | kilovolt |

| | |
|---|---|
| $L_{eq}$ | equivalent sound level |
| $L_{eq}(h)$ | 1-hour $L_{eq}$ |
| LOMR | Letter of Map Revision |
| LRTP | Long Range Transportation Plan |
| LOS | Level of Service |
| | |
| MAG | Maricopa Association of Governments |
| MC85 | Maricopa County 85 |
| MCDOT | Maricopa County Department of Transportation |
| MCESD | Maricopa County Environmental Services Department |
| MCPR | Maricopa County Parks and Recreation |
| mph | miles per hour |
| | |
| NAAQS | National Ambient Air Quality Standards |
| NAC | Noise Abatement Criteria |
| $NO_2$ | nitrogen dioxide |
| | |
| $O_3$ | ozone |
| | |
| Pb | Lead |
| $PM_{10}$ | particulate matter equal to or smaller than 10 microns in diameter |
| $PM_{2.5}$ | particulate matter equal to or smaller than 2.5 microns in diameter |
| ppm | parts per million |
| | |
| RTP | Regional Transportation Plan |
| | |
| SHPO | State Historic Preservation Office |
| $SO_2$ | sulfur dioxide |
| SR | State Route |
| SRP | Salt River Project |
| | |
| TI | traffic interchange |
| | |
| URS | URS Corporation |
| U.S.C. | U.S. Code |
| USDOT | U.S. Department of Transportation |

# KEY TRANSPORTATION DEFINITIONS

**Alignment**: The geometric characteristics or layout of a roadway.

**Arterial**: A street classification for roadways other than highways that serve major traffic volumes. Arterial streets are designed to carry high volumes of through traffic. Access is usually limited to intersections and major driveways. Arterial streets serve as a link between major activity centers within the urban area.

**Average daily traffic**: The average number of vehicles that passes a specified point during a 24-hour period. Unless otherwise stated, the average is over a calendar year.

**Capacity**: (1) The maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or a roadway in one direction, or in both directions for a two-lane or three-lane highway, during a given time period under prevailing roadway and traffic conditions; and (2) the number of passengers that can be transported over a given section of a transit line in one direction during a given time period (usually one hour) under prevailing traffic conditions.

**Control of access**: The condition where the right of owners or occupants of abutting land or other persons to access, light, air, or view in connection with a highway is fully or partially controlled by public authority.

**Corridor**: A strip of land between two termini within which traffic, topography, environment, and other characteristics are evaluated for transportation purposes.

**Design capacity**: The maximum number of vehicles that can pass over a lane or a roadway during one hour without operating conditions falling below a preselected design level.

**Design concept**: Preliminary design of a transportation facility in which type, location, alignment, capacity, design criteria, and design features are determined. The level of design is usually 15 percent to 30 percent of the complete design needed for construction.

**Design speed**: A speed determined for design and correlation of the physical features of a highway that influence vehicle operation. It is the maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern.

**Design volume**: A volume determined for use in design, representing traffic expected to use the highway. Unless otherwise stated, it is an hourly volume and usually is estimated to occur 20 to 25 years in the future.

**Freeway**: A divided highway usually having two or more traffic lanes in each direction. Traffic can enter or exit a freeway only at ramped interchanges so that "through" traffic is not interrupted. This system carries most of the trips entering and leaving the urban area, as well as most of the through movements by-passing the central city and in large metropolitan areas, it carries large volumes of traffic within the urban area.

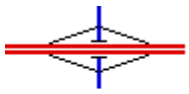
**Frontage Road**: A roadway (usually one-way) which parallels an access-controlled highway in order to provide access to abutting property and to serve shorter trips in the corridor.

**Grade separation**: An intersection where one road passes over the other on a bridge. Adding ramps to a grade separation, providing access from one road to another, creates an interchange.

**Gore**: An area where two roadways diverge or converge. The area includes marked pavement between roadways.

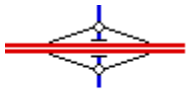
**Horizontal alignment**: The linear shape of a roadway, made up of a set of straight lines and curves to follow the path chosen for the roadway.

**Interchanges**:



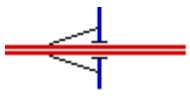
Diamond

**Diamond**: Basic four-ramp interchange between a freeway and a surface street. The four diagonal ramps, one in each quadrant, suggest a diamond shape. The basic diamond (left) is the most widely used service interchange type.



Double Roundabout

**Double (Dual) Roundabout**: A diamond interchange with roundabouts at the ramp terminals (left) is relatively new in Arizona.



Half Diamond

**Half-Diamond**: An interchange with only two diagonal ramps, one entrance and one exit, in adjacent quadrants. This interchange serves traffic to and from one direction along the freeway, but ignores the other.

"T" Interchange

**Three-legged "T" Interchange**: This is the typical way to end one freeway at another. It is designed for higher speeds and uninterrupted traffic flow.

**Metropolitan Planning Organization**: That organization designated as being responsible, together with the State, for conducting the continuing, cooperative, and comprehensive planning process under Title 23, United States Code, Part 134 (23 U.S.C. 134) and 49 U.S.C. 1607. It is the forum for cooperative transportation decision making for the metropolitan planning area.

**Mitigation**: Mitigation includes: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

**Right-of-way**: A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

**Service interchange**: An interchange between a freeway and an arterial.

**System interchange**: An interchange between two freeways**.**

**Traffic**: The vehicles or persons passing a specified point during a given period.

**Traffic interchange**: Either a service or system interchange.

**Vertical alignment**: The vertical shape of a roadway (rises and dips) made up of straight lines and curves.

**Volume**: The number of vehicles passing a given point during a specified period of time.

**Weaving**: The crossing of traffic streams moving in the same general direction accomplished by merging and diverging.

**Weave distance**: The space available between the gores of ramps from adjacent interchanges for the crossing or weave of traffic entering and exiting the system.

# MITIGATION MEASURES

Mitigation measures have been defined to avoid or minimize the environmental impacts of the preferred alignment. These mitigation measures are not subject to change without prior written approval from the Arizona Department of Transportation.

## Design Responsibilities

1. During final design, coordination with the U.S. Army Corps of Engineers would occur to complete the jurisdictional delineation to formally define whether washes are jurisdictional waters of the United States, and identify permit requirements under Sections 401 and 404 of the Clean Water Act (refer to page 4-10).

2. Removal or disturbance of vegetation would be minimized through project design as practicable. In areas where native vegetation must be removed, would restore to natural conditions by reseeding with species native to the area and replacing trees and shrubs with native species instead of landscaped exotic species. All disturbed soils not landscaped or otherwise permanently stabilized by construction would be seeded using species native to the project vicinity (refer to page 4-13).

3. Project features would be constructed of materials that complement the surrounding landscape's colors and textures. In addition, retaining walls associated with any rock cuts would be compatible with the rugged form, textures, colors, and lines of the surrounding setting and with those of the new retaining walls, to the extent practicable (refer to page 4-26).

4. Project facilities would be designed to blend with the desert nature of their surroundings, to the extent practicable (refer to page 4-26).

5. During final design, the Arizona Department of Transportation project manager would contact the Arizona Department of Transportation Environmental Planning Group hazardous materials coordinator (602-712-7768) to determine the need for additional site assessment (refer to page 4-43).

6. The Arizona Department of Transportation Utility and Railroad Engineering Section would investigate potential utility conflicts during the project design phase (refer to page 4-56).

7. Because one or more acres of land would be disturbed, the Arizona Department of Transportation Roadside Development Section would determine who would prepare the Stormwater Pollution Prevention Plan (refer to page 4-10 to11).

8. Culverts that are included in the project design would be sized to allow Sonoran desert tortoises to pass through them; this would minimize the effects of habitat fragmentation by providing opportunities for movement of wildlife across the proposed project. During final design, Arizona Department of Transportation would coordinate with Arizona Game and Fish Department to address further concerns regarding habitat connectivity (refer to page 4-14).

### Arizona Department of Transportation Responsibilities

1. Because more than one acre would be disturbed during construction, an Arizona Pollutant Discharge Elimination System/National Pollutant Discharge Elimination System permit would be required. The Arizona Department of Transportation District Construction Office and the contractor would submit the Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality and U.S. Environmental Protection Agency (refer to page 4-10 to 11).

2. Protected native plants within the construction limits would be impacted by the proposed project; therefore, the Arizona Department of Transportation's Roadside Development Section would notify the Arizona Department of Agriculture at least 60 days prior to the start of construction so that the Arizona Department of Agriculture can determine the disposition of these plants (refer to page 4-18).

3. The Phoenix Construction District would provide a construction notice to adjacent residents and businesses at least two weeks prior to construction (refer to page 4-54).

4. If suspected hazardous materials are encountered during construction, work would cease at that location and the Arizona Department of Transportation Engineer would arrange for proper assessment, treatment, or disposal of those materials (refer to page 4-42).

5. To minimize emissions from idling and slow moving traffic in the construction zones, traffic control would be in accordance with the most current *Manual on Uniform Traffic Control Devices for Streets and Highways*, published by the Federal Highway Administration, including any revisions or additions, and/or associated provisions in the project plans, as determined by the Arizona Department of Transportation Traffic Design Section during design (refer to page 4-30).

## Contractor Responsibilities

1. All discarded waste (including but not limited to human waste, trash, debris, oil drums, fuel, ashes, equipment, concrete, and chemicals) generated during construction activities would be removed and/or disposed of according to federal and state regulations (refer to page 4-42).

2. Because more than one acre would be disturbed during construction, an Arizona Pollutant Discharge Elimination System/National Pollutant Discharge Elimination System permit would be required. The Arizona Department of Transportation Construction District Office and contractor would submit the Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality and U.S. Environmental Protection Agency (refer to page 4-10 to 11).

3. The contractor would adhere to the Arizona Game and Fish Department's *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* in the event desert tortoises are encountered during construction (refer to page 4-17).

4. All disturbed soils that would not be landscaped or otherwise permanently stabilized by construction would be seeded using species native to the project vicinity (refer to page 4-19).

5. To prevent the introduction of invasive species seeds, all construction equipment would be washed prior to entering the construction site. To prevent invasive species seeds from leaving the site, the contractor would inspect all equipment and remove attached plant/vegetation debris prior to leaving the construction site (page 4-19).

6. Construction of the project would comply with *Maricopa County Air Quality Rule 310 – Fugitive Dust Sources* and any required air quality permits (refer to page 4-30).

## Standard Specifications included as Mitigation Measures

1. According to Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 107, "Legal Relations and Responsibility to Public," Subsection 05, "Archaeological Features," "[w]hen previously unidentified archaeological, historical, or paleontological features are encountered or discovered during any activity related to the construction of the project, the contractor would stop work immediately at that location and would take all reasonable steps to secure the preservation of those resources and notify the Engineer." The ADOT Engineer would, in turn, notify Environmental Planning Group Historic Preservation Team (602-712-8636) to evaluate the significance of the resources (refer to page 4-47).

2. According to the Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 104, "Scope of Work," Subsection 08, "Prevention of Air and Noise Pollution," "[t]he contractor would control, reduce, remove or prevent air pollution in all its forms, including air contaminants, in the performance of the contractor's work." The contractor would comply with all air pollution ordinances, regulations, orders, etc., during construction. All dust-producing surfaces would be watered or otherwise stabilized to reduce short-term impacts associated with an increase in particulate matter attributable to construction activity (refer to page 4-29).

3. According to the Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 104, "Scope of Work," Subsection 08, "Prevention of Air and Noise Pollution," "[t]he contractor would comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract. Each internal combustion engine used for any purpose on the work or related to the work would be equipped with a muffler of a type recommended by the manufacturer" (refer to page 4-39).

4. According to Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 104, "Scope of Work," Subsection 09, "Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs," "[t]he contractor would give special attention to the effect of its operations on the landscape and would take special care to maintain natural surroundings undamaged" (refer to page 4-10).

5. According to Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 104, "Scope of Work," Subsection 09, "Prevention of Landscape Defacement; Protection of Streams, Lakes, and Reservoirs," Arizona Department of Transportation would ensure that, "[t]he contractor would take sufficient precautions, considering various conditions, to prevent pollution to streams, lakes, and reservoirs with fuels, oils, bitumens, calcium chloride, fresh Portland cement, raw sewage, muddy water, chemicals, or other harmful materials. None of these materials would be discharged into any channels leading to such streams, lakes, or reservoirs" (refer to page 4-10).

6. According to Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 107, "Legal Relations and Responsibility to Public," Subsection 07, "Sanitary, Health, and Safety Provisions," should the contractor encounter potential hazardous or contaminated material, the contractor would immediately stop work and remove workers, barricade the area, provide traffic controls and notify the

Arizona Department of Transportation Engineer. The Engineer would arrange for proper assessment, treatment, or disposal of those materials. Such locations would be investigated and proper action implemented prior to the continuation of work in that location (refer to page 4-42).

7. According to Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 1001, "Material Sources," Subsection 2, "General," any material sources required for this project outside of the project area would be examined for environmental effects, by the contractor, prior to use, through a separate environmental analysis (refer to page 4-56 to 57).

8. According to Arizona Department of Transportation *Standard Specifications for Road and Bridge Construction*, (2000 Edition), Section 107, "Legal Relations and Responsibility to Public," Subsection 11, "Protection and Restoration of Property and Landscape," "[m]aterials removed during construction operations such as trees, stumps, building materials, irrigation and drainage structures, broken concrete, and other similar materials would not be dumped on either private or public property unless the contractor has obtained written permission from the owner or public agency with jurisdiction over the land. Written permission would not be required, however, when materials are disposed of at an operating, public dumping ground." The contractor would dispose of excess waste material and construction debris at a municipal landfill approved under Title D of the Resource Conservation and Recovery Act, construction debris landfill approved under Article 3 of the Arizona Revised Statutes 49-241 (Aquifer Protection Permit) administered by the Arizona Department of Environmental Quality, an inert landfill, or at another approved site (refer to page 4-57).

# CHAPTER 1 – INTRODUCTION

## 1.1 EXPLANATION OF ENVIRONMENTAL ASSESSMENT

This Draft Environmental Assessment (DEA) has been prepared to evaluate the potential social, economic, and environmental impacts of a proposed project while providing an opportunity for the public and local, state, or federal agencies to contribute input through scoping, public information meetings, and a public hearing. This DEA provides the Arizona Department of Transportation (ADOT) a detailed analysis to better examine and consider the level of impacts resulting from the proposed project on any sensitive social and environmental resources, and assists ADOT in their decision-making process.

## 1.2 PROJECT LOCATION

The proposed project is located in Maricopa County, Arizona, in the northwest portion of the greater Phoenix Metropolitan area (see Figure 1-1). As shown in Figure 1-2, the project area is located in a sparsely populated desert area west of Interstate 17 (I-17) and south of the Carefree Highway, also known as State Route (SR) 74. The proposed project extends from one-half mile south of Happy Valley Parkway near the 115th Avenue section line to approximately 43rd Avenue, and includes a connection from this alignment at approximately 81st Avenue to SR 74 (see Figure 1-3).

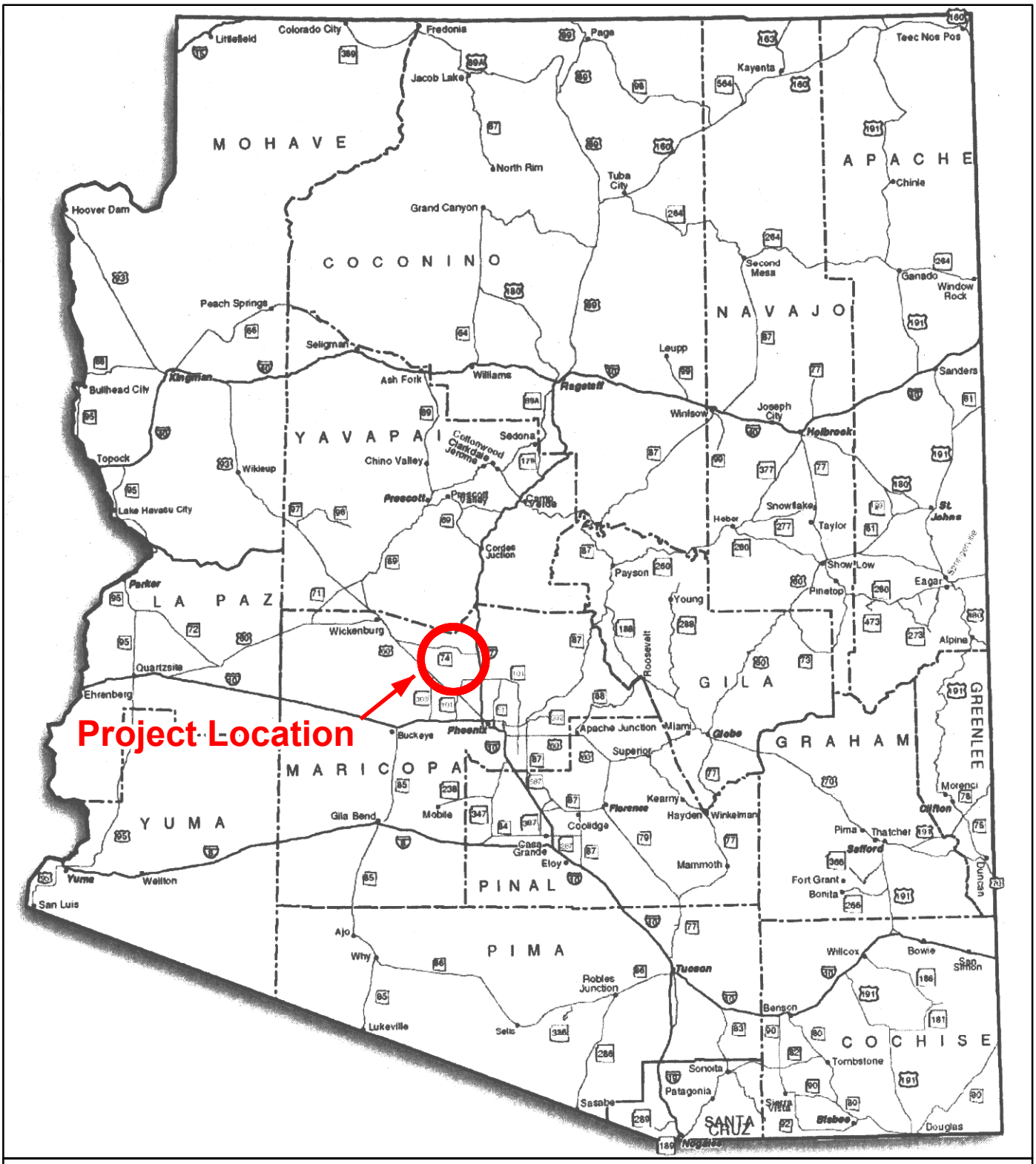
## 1.3 EXPLANATION OF PROPOSED PROJECT

ADOT proposes to construct the Estrella Freeway, SR 303L, along a new alignment from Happy Valley Parkway northward and eastward to the future 43rd Avenue, and construct a direct connection from this new route to existing SR 74 (Carefree Highway). The proposed project is part of the Maricopa Association of Governments (MAG) Regional Transportation Plan (RTP). In that plan, SR 303L is planned for construction as a multi-lane freeway from Maricopa County 85 (MC 85) south of Interstate 10 (I-10) to I-17. The proposed project is an important part of this planned regional freeway. The proposed project includes service interchanges at Happy Valley Parkway and Lake Pleasant Parkway plus six additional locations where future arterials are planned by the Cities of Peoria and Phoenix. The proposed project also includes a system interchange for the connection to SR 74. Several major crossings are included in the proposed project: two river crossings at the Agua Fria River and New River; over the Central Arizona Project (CAP) canal system; two crossings of the Beardsley Canal; and three crossings of major washes.

In 2004, the Maricopa County Department of Transportation (MCDOT) constructed a four-lane divided highway along the planned SR 303L corridor from US 60 to Happy Valley Parkway. The proposed project would begin one-half mile south of Happy Valley Parkway near the 115th Avenue section line and slightly realign the existing roadway to the west and construct a grade-separated interchange at Happy Valley Parkway.

The proposed project is illustrated in Figure 1-3. The preferred alignment of the proposed project extends northeastwardly, generally paralleling the west side of the Agua Fria River to a point where it intersects the Lone Mountain Road section line. From there it turns east, crossing Lake Pleasant Parkway. The preferred alignment then shifts slightly northward from the Lone Mountain section line, avoiding some buttes and the impoundment area behind New River Dam, and crossing the CAP Canal and New River east of the 67th Avenue section line. Then the preferred alignment swings southward to the Lone Mountain Road section line, crosses Deadman Wash, and proceeds to 43rd Avenue. A connection is proposed from SR 303L near the New River to SR 74 (Segment 4 on Figure 1-3).

This DEA was prepared by ADOT and was produced in accordance with Part 3.2.4 of the Action Plan of ADOT for state-funded highway projects (ADOT 1983). A separate environmental assessment (EA) was produced for the portion of SR 303L from 43rd Avenue to I-17 because that project involves a connection to a federal highway. The 43rd Avenue to I-17 EA was prepared by ADOT in cooperation with the Federal Highway Administration (FHWA) and was produced in accordance with the National Environmental Policy Act of 1969 and the policies of the FHWA. Because the two projects are so closely related, the environmental analyses for the two projects were prepared concurrently, and many of the maps in this DEA show both projects together for reference purposes.




**Legend**

Project Location

N

0 30 60

Miles

**State Map**

**Estrella Freeway (SR 303L), Happy Valley Road to 43rd Avenue**

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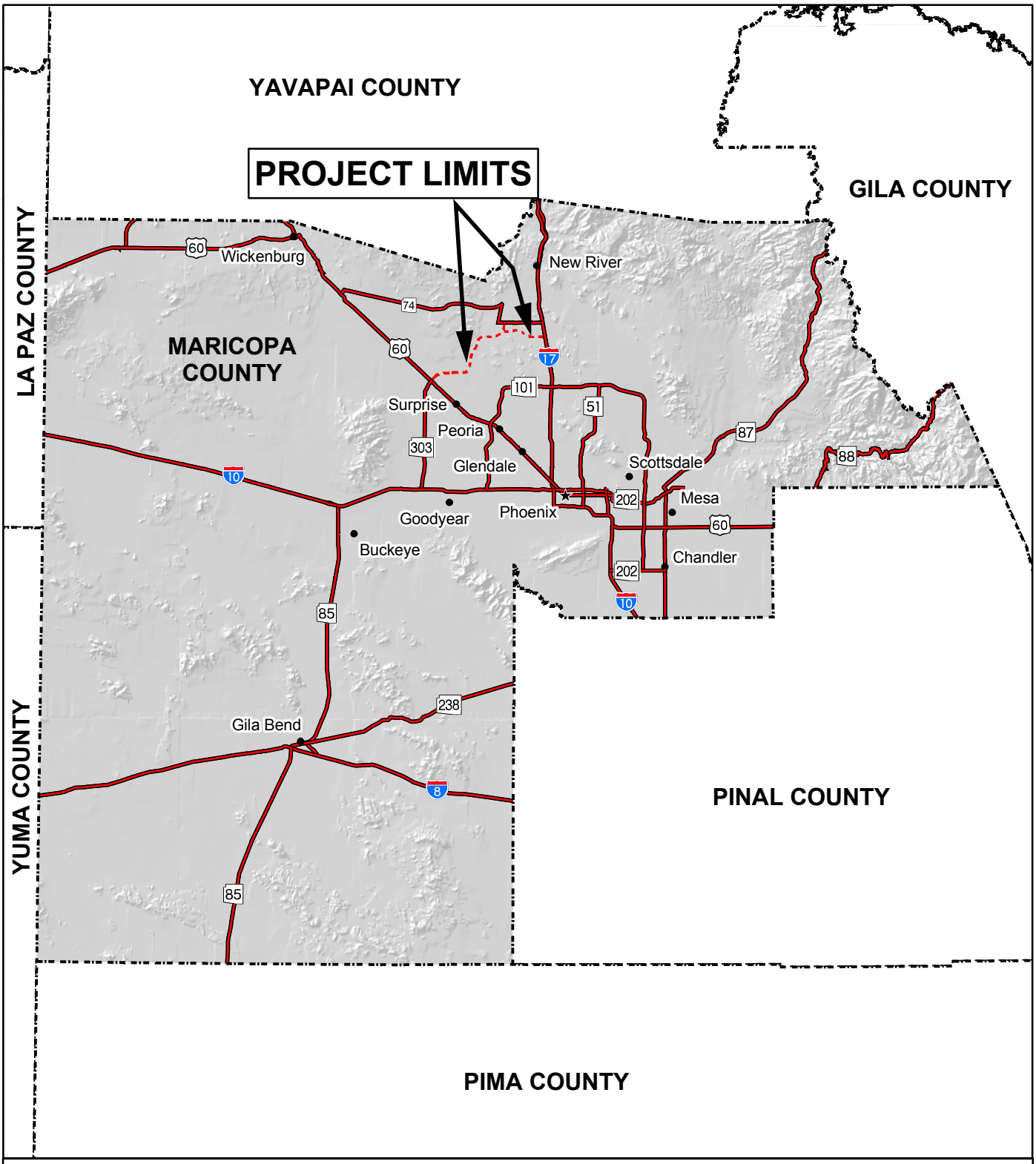
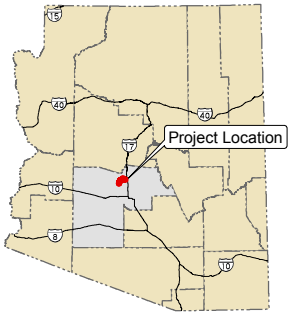
Figure 1-1

Source:
-Arizona Department of Transportation, 2004.




## Legend

- Proposed Highway
- Major Transportation Route
- City or Town
- Interstate Highway
- US Highway
- State Route




Source:
-Arizona Land Resource Information System, 1997.
-Map created with TOPO!(tm) (c)2002 National Geographic Holdings (www.topo.com).

**Estrella Freeway (SR 303L), Happy Valley Road to 43rd Avenue**

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**County Map**

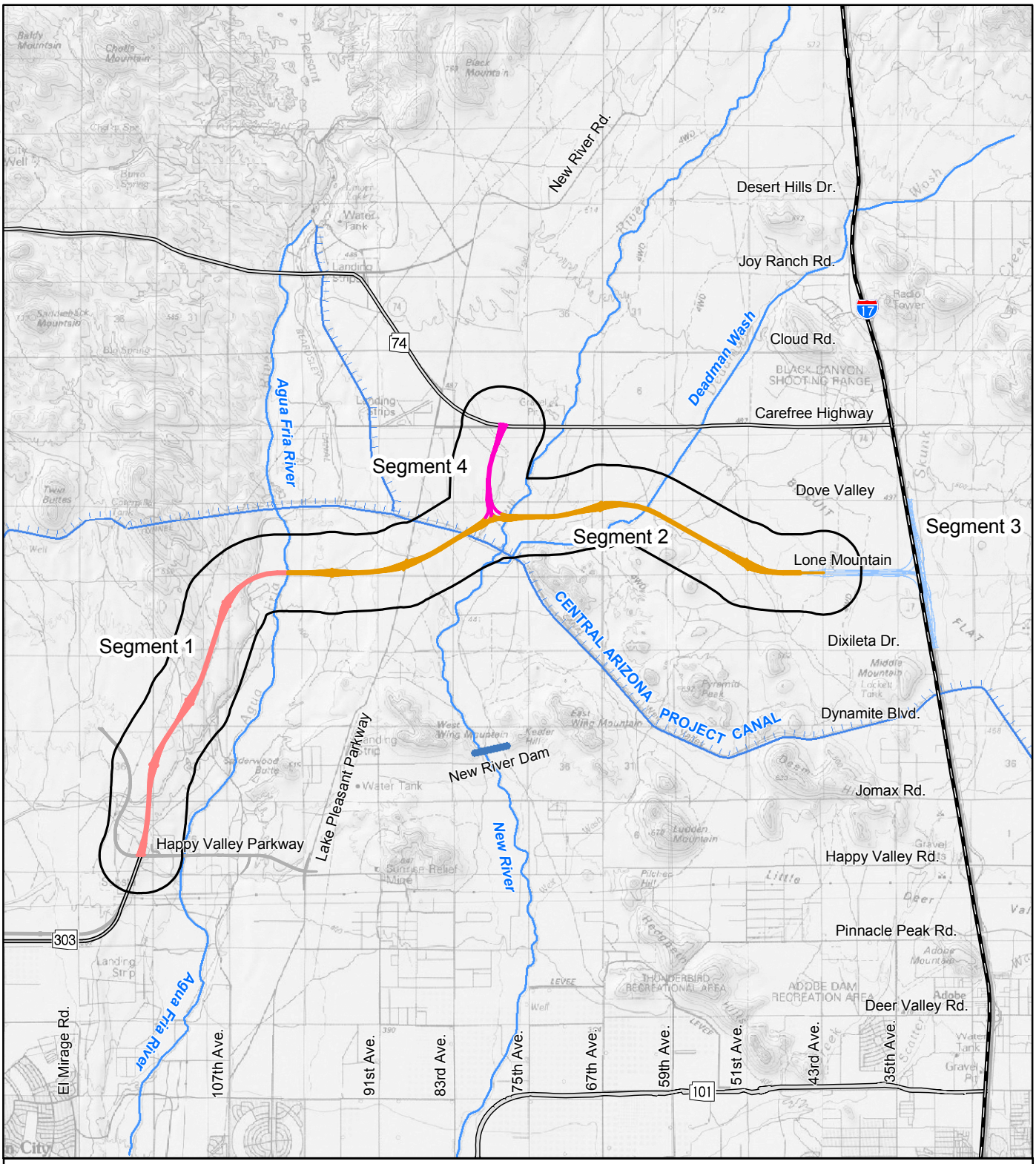
Figure 1-2

N

0 10 20
Miles

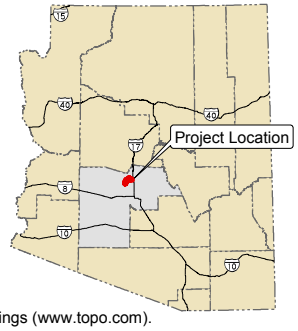
Federal Highway Administration

ADOT




## Legend

- Study Boundary
- County Line
- Study Segment 1
- Study Segment 2
- Study Segment 3
- Study Segment 4
- Interstate/Highway
- State Route




Source:
-Arizona Land Resource Information System, 1997.
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# Vicinity Map
# Estrella Freeway (SR 303L), Happy Valley Road to 43rd Avenue

Project No. S 303-A-200
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Figure 1-3

N

0 1 2
Miles

ADOT